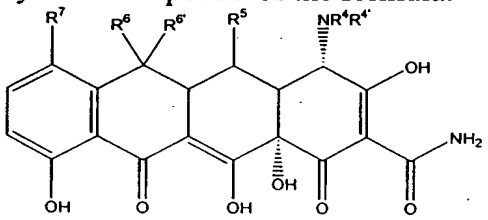
CLAIMS

1. A 7-substituted tetracycline compound of the formula:



(I)

wherein:

R^4 and $R^{4'}$ are each alkyl;

R^5 is hydrogen, hydroxyl, or a prodrug moiety;

R^6 and $R^{6'}$ are each independently hydrogen, hydroxyl, alkyl, or taken together, alkenyl;

R^7 is an N-substituted phenyl; and pharmaceutically acceptable salts thereof, and pharmaceutically acceptable salts thereof.

2. The compound of claim 1, wherein R^5, R^6 and $R^{6'}$ are each hydrogen and R^4 and $R^{4'}$ are each methyl.

3. The compound of claim 1, wherein R^7 is 2-N-substituted phenyl.

4. The compound of claim 3, wherein said 2-N-substituted phenyl is substituted with a nitro group.

5. The compound of claim 4, wherein said compound is 7-(2-nitrophenyl) sancycline.

6. The compound of claim 3, wherein said 2-N-substituted phenyl is 2-amino substituted.

7. The compound of claim 5, wherein said 2-amino substituent is dialkylamino.

8. The compound of claim 3, wherein said compound is selected from the group consisting of 7-(2-aminophenyl) sancycline, 7-(2-nitrophenyl) sancycline, 7-(2-N,N,-dimethylaminophenyl) sancycline, 7-(2-N,N,-diethylaminophenyl) sancycline, 7-(2-N,N,-dipropylaminophenyl) sancycline, and 7-(2-N,N,-dibutylaminophenyl) sancycline.

9. The compound of claim 7, wherein said dialkyl amino group is dimethylamino.

10. The compound of claim 9, wherein said compound is 7-(4-N,N,-dimethylaminophenyl) sancycline.

11. The compound of claim 1, wherein R^7 is 3-N-substituted phenyl.

12. The compound of claim 10, wherein said 3-N-substituted phenyl is substituted with a nitro group.

13. The compound of claim 12, wherein said compound is 7-(3-nitrophenyl) sancycline.

14. The compound of claim 11, wherein said 3-N-substituted phenyl is 3-amino substituted.

15. The compound of claim 14, wherein said 3-amino substituent is dialkylamino.

16. The method of claim 14, wherein said compound is selected from the group consisting of 7-(3-aminophenyl) sancycline, 7-(3-N,N,-dimethylaminophenyl) sancycline, 7-(3-N,N,-diethylaminophenyl) sancycline, 7-(3-N,N,-dipropylaminophenyl) sancycline, and 7-(3-N,N,-dibutylaminophenyl) sancycline.

17. The compound of claim 15, wherein said dialkyl amino group is dimethylamino.

18. The compound of claim 17, wherein said compound is 7-(4-N,N,-dimethylaminophenyl) sancycline.

19. The compound of claim 1, wherein R^7 is 4-N-substituted phenyl.

20. The compound of claim 19, wherein said 4-N-substituted phenyl is substituted with a nitro group.

21. The compound of claim 20, wherein said compound is 7-(4-nitrophenyl) sancycline.

22. The compound of claim 19, wherein said 4-substituted phenyl is 4-amino substituted.

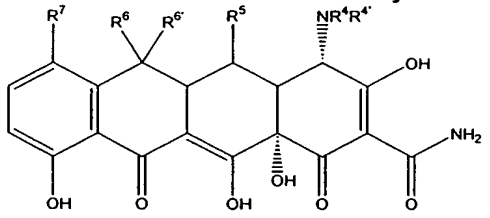
23. The compound of claim 22, wherein said 4-amino substituent is dialkyl.

24. The method of claim 23, wherein said compound is 7-(4-aminophenyl) sancycline, 7-(4-N,N,-diethylaminophenyl) sancycline, 7-(4-N,N,-dipropylaminophenyl) sancycline, or 7-(4-N,N,-dibutylaminophenyl) sancycline.

25. The compound of claim 23, wherein said dialkyl amino group is dimethyl.

26. The compound of claim 25, wherein said compound is 7-(4-N,N,-dimethylaminophenyl) sancycline.

27. A method for treating a tetracycline responsive state in a mammal, comprising administering to said mammal a 7-substituted tetracycline compound of formula (I):



(I)

wherein:

R^4 and $R^{4'}$ are each alkyl;

R^5 is hydrogen, hydroxyl, or a prodrug moiety;

R^6 and $R^{6'}$ are each independently hydrogen, hydroxyl, alkyl, or taken together, alkenyl;

R^7 is an N-substituted phenyl; and pharmaceutically acceptable salts thereof, such that the tetracycline responsive state is treated.

28. The method of claim 27, wherein R^5, R^6 and $R^{6'}$ are each hydrogen and R^4 and $R^{4'}$ are each methyl.

29. The method of claim 27, wherein R^7 is 2-N-substituted phenyl.

30. The method of claim 29, wherein said 2-N-substituted phenyl is substituted with a nitro group.

31. The method of claim 29, wherein said 2-N-substituted phenyl is 2-amino substituted.

32. The method of claim 29, wherein said compound is selected from the group consisting of 7-(2-aminophenyl) sancycline, 7-(2-nitrophenyl) sancycline, 7-(2-N,N,-dimethylaminophenyl) sancycline, 7-(2-N,N,-diethylaminophenyl) sancycline, 7-(2-N,N,-dipropylaminophenyl) sancycline, and 7-(2-N,N,-dibutylaminophenyl) sancycline.

33. The method of claim 27, wherein R^7 is 3-N-substituted phenyl.

34. The method of claim 33, wherein said 3-N-substituted phenyl is substituted with a nitro group.

35. The method of claim 33, wherein said 3-N-substituted phenyl is 3-amino substituted.

36. The method of claim 33, wherein said compound is selected from the group consisting of 7-(3-aminophenyl) sancycline, 7-(3-nitrophenyl) sancycline, 7-(3-N,N,-dimethylaminophenyl) sancycline, 7-(3-N,N,-diethylaminophenyl) sancycline, 7-(3-N,N,-dipropylaminophenyl) sancycline, and 7-(3-N,N,-dibutylaminophenyl) sancycline.

37. The method of claim 27, wherein R^7 is 4-N-substituted phenyl.

38. The method of claim 37, wherein said 4-N-substituted phenyl is substituted with a nitro group.

39. The method of claim 37, wherein said 4-substituted phenyl is 4-amino substituted.

40. The method of claim 39, wherein said compound is 7-(4-aminophenyl) sancycline, 7-(4-nitrophenyl) sancycline, 7-(4-N,N,-dimethylaminophenyl) sancycline, 7-(4-N,N,-diethylaminophenyl) sancycline, 7-(4-N,N,-dipropylaminophenyl) sancycline, or 7-(4-N,N,-dibutylaminophenyl) sancycline.

41. The method of claim 27, wherein said tetracycline responsive state is a bacterial infection.

42. The method of claim 41, wherein said bacterial infection is associated with *E. coli.*

43. The method of claim 41, wherein said bacterial infection is associated with *S. aureus.*

44. The method of claim 41, wherein said bacterial infection is associated with *E. faecalis.*

45. The method of claim 41, wherein said bacterial infection is resistant to other tetracycline antibiotics.

46. The method of claim 27, wherein said compound is administered with a pharmaceutically acceptable carrier.

47. A pharmaceutical composition comprising a therapeutically effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier.

48. The pharmaceutical composition of claim 47, wherein said compound is selected from the group consisting of 7-(2-aminophenyl) sancycline, 7-(2-nitrophenyl) sancycline, 7-(2-N,N,-dimethylaminophenyl) sancycline, 7-(2-N,N,-diethylaminophenyl) sancycline, 7-(2-N,N,-dipropylaminophenyl) sancycline, 7-(2-N,N,-dibutylaminophenyl) sancycline, 7-(3-aminophenyl) sancycline, 7-(3-nitrophenyl) sancycline, 7-(3-N,N,-dimethylaminophenyl) sancycline, 7-(3-N,N,-diethylaminophenyl) sancycline, 7-(3-N,N,-dipropylaminophenyl) sancycline, 7-(3-N,N,-dibutylaminophenyl) sancycline, 7-(4-aminophenyl) sancycline, 7-(4-nitrophenyl) sancycline, 7-(4-N,N,-dimethylaminophenyl) sancycline, 7-(4-N,N,-diethylaminophenyl) sancycline, 7-(4-N,N,-dipropylaminophenyl) sancycline, and 7-(4-N,N,-dibutylaminophenyl) sancycline.